

Appl. No.: 10/525,903

(U.S. National Stage of PCT/JP2003/011012)

Second Preliminary Amdt. Dated September 1, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Previously Presented) An optical modulator comprising
a substrate comprised of a material having an electro-optic effect,
an optical waveguide formed on said substrate, and
a modulating electrode for allowing an electric field to work on said optical waveguide,
and changing a phase of light passing through said optical waveguide, wherein stray light
rejection means are provided on a surface of said substrate.
2. (Original) The optical modulator according to claim 1, wherein said stray light
rejection means comprises a stray light rejection groove, at least one part of which is formed
adjacent to said optical waveguide.
3. (Previously Presented) The optical modulator according to claim 2, wherein a
distance between said stray light rejection groove and said optical waveguide is 10 to 100 μm at
closest.
4. (Previously Presented) The optical modulator according to claim 2, wherein
depth of said stray light rejection groove is almost the same as or is more than depth of said
optical waveguide.

5. (Previously Presented) The optical modulator according to claim 2, wherein said stray light rejection groove is filled with a light absorbing material.

6. (Previously Presented) The optical modulator according to claim 1, wherein said optical waveguide comprises a branching optical waveguide, and at least one part of said stray light rejection means is provided adjacent to said branching optical waveguide.

7. (Previously Presented) The optical modulator according to claim 1, wherein at least one part of said stray light rejection means is provided between the optical waveguide upon which the electric field of the modulating electrode works and a side face of the substrate that is close to said optical waveguide.

8. (Previously Presented) An optical modulator comprising
a substrate comprised of a material having an electro-optic effect,
an optical waveguide formed on said substrate, and
a modulating electrode for allowing an electric field to work on said optical waveguide, and changing a phase of light passing through said optical waveguide, wherein
a low refractive index area with a refractive index lower than that of said substrate is provided at one portion of adjacent spaces comprising at least a lower portion and a side portion of said optical waveguide in order to prevent stray light from entering the optical waveguide.

9. (Previously Presented) The optical modulator according to claim 8, wherein
said low refractive index area has a thickness greater than a depth of said optical waveguide in a thickness direction of the substrate from a surface of said substrate, and
a refractive index between a deepest part of said low refractive index area and a reverse face of said substrate is higher than the refractive index of said low refractive index area.

10. (Previously Presented) The optical modulator according to claim 8, wherein said low refractive index area is formed by diffusion of a low refractive index material having a refractive index lower than that of said substrate, over said substrate.

11. (Previously Presented) The optical modulator according to claim 10, wherein said low refractive index area comprises MgO or ZnO as the low refractive index material.

12. (Currently Amended) An optical modulator comprising
a substrate comprised of a material having an electro-optic effect,
an optical waveguide formed on said substrate, and
a modulating electrode for allowing an electric field to work on said optical waveguide,
and changing a phase of light passing through said optical waveguide, wherein
a high refractive index area with a refractive index higher than a refractive index of said substrate is provided at a reverse face ~~or a side face~~ of said substrate.

13. (Previously Presented) The optical modulator according to claim 1, wherein antireflection treatment is given on a reverse face or a side face of said substrate.

14. (Previously Presented) The optical modulator according to claim 1, wherein the frequency of modulation drive is more than 40GHz.

15. (Previously Presented) The optical modulator according to claim 1, wherein input power of light input into said optical modulator is more than 10mW.

16. (Previously Presented) The optical modulator according to claim 3, wherein depth of said stray light rejection groove is almost the same as or is more than depth of said optical waveguide.

17. (Previously Presented) The optical modulator according to claim 3, wherein said stray light rejection groove is filled with a light absorbing material.

18. (Previously Presented) The optical modulator according to claim 8, wherein antireflection treatment is given on a reverse face or a side face of said substrate.

19. (Previously Presented) The optical modulator according to claim 8, wherein the frequency of modulation drive is more than 40GHz.

20. (Previously Presented) The optical modulator according to claim 8, wherein input power of light input into said optical modulator is more than 10mW.

21. (New) An optical modulator comprising
a substrate comprised of a material having an electro-optic effect,
an optical waveguide formed on said substrate, and
a modulating electrode for allowing an electric field to work on said optical waveguide,
and changing a phase of light passing through said optical waveguide, wherein
a high refractive index area with a refractive index higher than a refractive index of said
substrate is provided at a side face of said substrate.

22. (New) The optical modulator according to claim 21, wherein a high refractive
index area with a refractive index higher than a refractive index of said substrate also is provided
at a reverse face of said substrate.